

What is claimed is:

1. A method for performing pacing interval optimization, comprising:
  - (a) producing a signal indicative of cardiac contractions of a patient's heart, as the patient's heart is paced using different sets of pacing interval parameters;
  - (b) obtaining measures of pulse amplitude from the signal; and
  - (c) performing pacing interval optimization based on the measures of pulse amplitude.
2. The method of claim 1, wherein step (c) includes selecting one of the sets of pacing parameters, corresponding to a greatest measure of pulse amplitude, as a preferred set.
3. The method of claim 1, wherein step (c) includes selecting one of the sets of pacing parameters, corresponding to a greatest pulse amplitude variability, as a preferred set.
4. The method of claim 1, wherein the signal comprises a plethysmography signal, and step (a) comprises producing the photo-plethysmography signal using a light source and a detector.
5. The method of claim 4, wherein the light source and the detector are implanted in the patient.
6. The method of claim 5 wherein the light source and the detector are not implanted in the patient.
7. The method of claim 1, wherein step (a) comprises using a non-implanted transducer, that measures changes in blood pressure, to produce the signal.

8. The method of claim 7, wherein the non-implanted transducer comprises a pressure transducer.
9. The method of claim 8, wherein the non-implanted transducer comprises a strain gauge.
10. The method of claim 1, wherein step (a) comprises using an implanted transducer, that detects heart sounds, to produce the signal.
11. The method of claim 10, wherein the implanted transducer comprises a microphone.
12. The method of claim 10, wherein the implanted transducer comprises an accelerometer.
13. The method of claim 1, wherein the signal is a measures of arterial pressure.
14. The method of claim 1, wherein the signal is produced using an ultrasound transducer.
15. The method of claim 1, wherein each set of pacing interval parameters includes at least one pacing interval parameter, with an initiating event being either a delivered pace pulse or a sensed depolarization.
16. The system of claim 15, wherein each set of pacing interval parameters includes at least one of the following pacing interval parameters:
  - atrio-ventricular delay;
  - interventricular delay; and
  - interatrial delay.

17. The method of claim 1, wherein each measure of pulse amplitude obtained in step (b) comprises an average of multiple pulse amplitudes measured over a period of time during which the patient's heart is paced using one of the sets of pacing interval parameters.
18. The method of claim 1, wherein each measure of pulse amplitude obtained in step (b) comprises a measure of pulse amplitude variability over a period of time during which the patient's heart is paced using one of the sets of pacing interval parameters.
19. A system for performing pacing interval optimization, comprising:
  - a pacing circuit to pace a patient's heart using different sets of pacing interval parameters;
  - means for producing a signal indicative of cardiac contractions of a patient's heart, as the patient's heart is paced using different sets of pacing interval parameters; and
  - a processor adapted to obtain measures of pulse amplitude from the signal, and to perform pacing interval optimization based on the measures of pulse amplitude.
20. The system of claim 19, wherein the signal comprises a photo-plethysmography signal, and the means for producing the signal comprises a light source and a detector.
21. The system of claim 19, wherein the means for producing the signal comprises a pressure transducer.
22. The system of claim 19, wherein the means for producing the signal comprises a strain gauge.
23. The system of claim 19, wherein the means for producing the signal comprises a microphone.

24. The system of claim 19, wherein the means for producing the signal comprises an accelerometer.

25. The system of claim 19, wherein the means for producing the signal comprises an ultrasound transducer.